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(54) [Title of the invention] Method for manufacturing a blow-moulded article with pipe attached

(57) [Abstract]

[Aim] The aim of the invention is to dispense with a perforating process by making the diameter of a fitting base part of the insert pipe larger than that of a tubular part, and by, when a parison is pressure-contacted with a mould, causing the parison to swell inside the abovementioned fitting base part, rupturing the front end and connecting with the tubular part.

[Configuration] Insert pipe 1 is attached to mould 6, parison 9 is pressure-contacted with the mould, and is then made to swell inside the fitting base part 3 of the insert pipe 1, the part corresponding to the tubular part 2 is ruptured, and tubular part 2 and the inner part of parison 9 are connected. Insert pipes are fitted to blow-moulded articles such as ducts in this way, and the pipe perforating process after blow-moulding is dispensed with. Accordingly, production efficiency improves, and there are no residual cuttings or the like.

[Scope of the patent claim]

[Claim 1] Method for manufacturing a blow-moulded article with pipe attached, wherein, in a manufacturing method where moulded articles with an insert pipe fitted to the side wall are manufactured by blow-moulding, a fitting base part of larger diameter is provided in a step-shape in the base-end side of the tubular part of an insert pipe, a blind stopper is placed in the front end side of the tubular part, said insert pipe is attached to a blow-moulding mould, a parison is inserted inside the mould, the parison is pressure-contacted with the mould using air pressure, further pressure is applied to cause the part of the parison corresponding with the inside of the fitting base part of the insert pipe to swell and to pressure-contact the inner wall of the fitting base part, and the part of the parison corresponding with the base end side aperture of the tubular part is ruptured using air pressure, the inside of the parison and the inside of the tubular part are connected and the blind stopper is removed.

[Detailed description of the invention]

[0001]

[Field of industrial use] The present invention pertains to a method for manufacturing moulded articles with an insert pipe fitted to the side wall by blow-moulding.

[0002]

[Prior art] There are cases where insert pipes are fitted simultaneously when manufacturing synthetic resin moulded articles by blow-moulding. With the conventional method, as shown in Figure 2, pipe 15, which has the base-end part blocked off by a base wall 16, is attached inside mould 17, parison 18 is inserted inside the mould 17, and, as shown in the figure, is pressure-contacted with the mould 17 using air pressure P; after removing the mould 17, the part 19 which corresponds to the base wall 16 and the base wall 16 of the parison 18 is cut away and perforating processing is performed.

[0003]

[Problems to be solved by the invention] A perforating process is required at the end of the moulding process in the abovementioned manufacturing method of the prior art, which makes it troublesome with many processes. Further, an operation is also necessary to remove the cuttings etc. produced by the perforating process, and if the cuttings remain in the moulded article as foreign matter, they can impede the use of the moulded article. For example, if the tubular duct which is the moulded article is used in the intake system of an internal combustion engine and the cuttings are taken in inside the engine, they can become the cause of breakdown and wear.

[0004]

[Means for solving the problems] A method for manufacturing a moulded article with insert pipe attached wherein, in the side to be fitted to the moulded article of the insert pipe, a fitting base part with a diameter larger than the tubular part is formed in a step-shape, a blind stopper is placed in the front end of the insert pipe, said insert pipe is attached to a blow-moulding mould, and when blow-moulding, the parison is pressure-contacted with the mould using air pressure, further pressure is applied and the parison is caused to swell inside the fitting base part of the insert pipe and pressure-contacted with the inner wall of the fitting base part, and the part which corresponds to the aperture of the base end of the tubular part is ruptured using air pressure and the inner part of the parison and the inside of the tubular part are connected.

[0005]

[Action] With this manufacturing method, the blind stopper may simply be removed at the end of the moulding process, there is no need to perforate the wall face of the parison and the pipe base part, and cuttings are not produced.

[0006]

[Embodiment] The embodiment according to Figure 1 will be described. Insert pipe 1 is produced from a hard synthetic resin with the tubular part 2 and the large diameter fitting base part 3 connected integrally in a step shape, and a linking groove 4 is provided in the open end of the fitting base part 3. When insert pipe 1 is attached to the aperture 7 of the mould 6, the blind stopper 5 attached to the mould 6 can be inserted into the aperture end of insert pipe 1. Mould 6 may be any suitable one piece or split-mould.

[0007] Parison 9 is hung downwards from the top in a state in which it is tubular and of smaller diameter than the state shown in Figure 1, pressurized air is blown in as shown in the figure to effect pressure P inside, the diameter is increased and it pressure-contacts the inner face of the mould 6. At this time, linking groove 4 is connected to the parison 9. Next, when more pressurized air is blown in, pressure Q is effected, the part of parison P corresponding to the inside of the fitting base part 3 swells, becomes slightly thin, and is pressure-contacted with the inner face of the fitting base part 3. When this pressurized state is continued further, the part of swollen parison 9 corresponding to the base part side aperture 10 of the tubular part 2 gets thinner, ruptures due to the air pressure and aperture part 11 of the parison 9 as shown in the figure is formed.

[0008] When the difference in pressure required to swell and rupture parison 9 is insufficient between the parison inner part and the inside of the insert pipe 1, a vent 12 is provided as required and the inside of the insert pipe 1 may be set to atmospheric pressure such that the

union between the atmosphere side and the inside can be broken by the swelling of parison 9.

[0009] Blind stopper 5 is removed with mould 6 to complete the required moulded article with insert pipe attached. In this case, as long as the article can be blow-moulded in the usual way the shape may be chosen as desired and the moulded article may be a tubular duct or it may be a container-shaped article in which one or both end parts are blocked.

[0010]

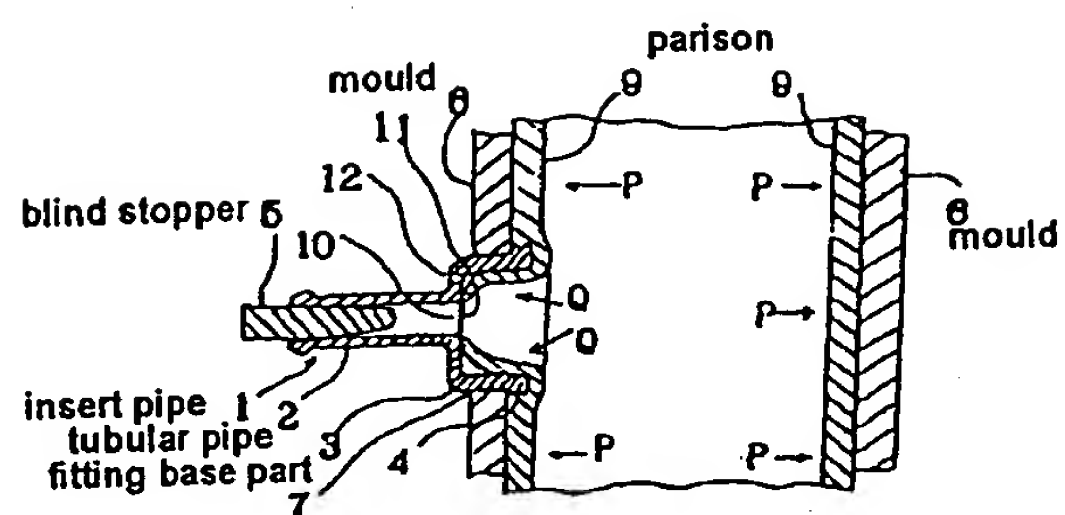
[Effect of the invention] With the manufacturing method of the present invention, when manufacturing a blow-moulded article with insert pipe attached, because there is no need for a process to perforate the pipe base wall and the moulded article side wall after blow-moulding, production efficiency is improved, and, furthermore, because there is no residual foreign matter of cuttings and the like which are likely to be produced due to perforating, reliability of the product quality is improved.

[Brief description of the figures]

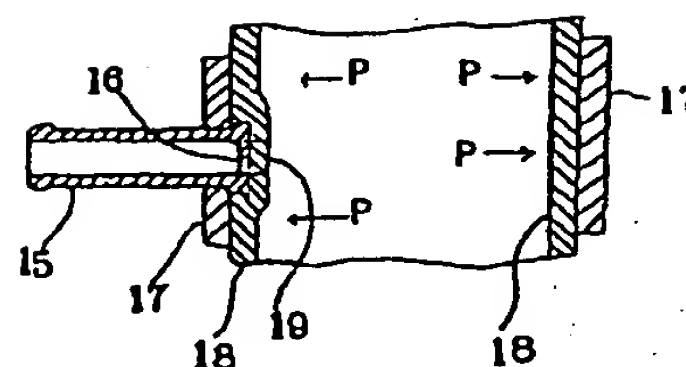
Figure 1 is a part cross section showing the state after the moulding process of the embodiment of the present invention; and

Figure 2 is a part cross section showing the state after the moulding process of a conventional moulded article.

[Figure 1]



[Figure 2]



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